

233 South Wacker Drive Suite 800 Chicago, IL 60606

312-454-0400 (voice) 312-454-0411 (fax) www.cmap.illinois.gov

#### **MEMORANDUM**

**To:** MPO Policy Committee

Date: December 17, 2009

From: CMAQ Project Selection Committee

**Re:** Programming CMAQ Funds to Private-Sector Diesel Emission Reduction

**Projects** 

This memo is in response to a request from MPO Policy Committee members for background information on the use of CMAQ funds for diesel emission reduction projects where the vehicles are owned by a private entity.

The use of such partnership has been recognized in FHWA's CMAQ guidance, which states that "these partnerships have become a critical part of CMAQ." Other public-private sector projects have been programmed with CMAQ funds in the region, notably a commuter boat purchased by a private operator with CDOT sponsorship, a truck stop electrification project to be built and operated by a private company sponsored by the Tollway, and the I-GO carsharing service, operated by the Center for Neighborhood Technology and sponsored by CDOT and IDOT.

# **Air Quality Background**

The Chicago region, including northeastern Illinois and northwest Indiana, is in nonattainment of national standards for ground-level ozone and fine particulate matter. Ozone is created by two precursor pollutants, volatile organic compounds and nitrogen oxides, in the presence of sunlight. Fine particulates are produced directly, and also by the interaction of other compounds in the atmosphere, notably nitrogen oxides.

Diesel engines produce significant amounts of nitrogen oxides and fine particulate matter. While new diesel engines are much cleaner, older engines produce these emissions in sufficient quantities to be a major cause of the region's mobile source emissions. Since diesel engines have a long life, older engines will continue to operate in the region for many years, emitting significant quantities of pollutants.

Since the region is in nonattainment of the air quality standards, the Illinois Environmental Protection Agency has developed a State Implementation Plan (SIP) to describe what steps will be taken to achieve the standards. These steps are distributed among four sectors: point

sources, area sources, on-road mobile sources, and off-road sources. For the on-road mobile source sector, the SIP establishes "budgets," or levels of emissions that must be achieved in order to meet the standards. In striving to meet the mobile source budgets, especially for direct fine particulates and nitrogen oxides, steps must be taken to reduce diesel emissions.

An air quality snapshot was developed as part of the information gathering effort for *GO TO 2040*, the region's official comprehensive plan. For further information about the region's air quality conditions and considerations, see the snapshot at: http://www.cmap.illinois.gov/snapshot.aspx#Air.

## **Diesel Emission Reduction Strategies**

A number of strategies are used to reduce diesel emissions. These include idle reductions, alternative fuels, and measures to reduce the emissions from the engine. The latter category can be divided into:

- Retrofit adding a device, such as a filter or oxidation catalyst to an existing engine to
  reduce the emissions. The engine must be capable of accommodating the device; some
  older engines don't work with the retrofit device. The vehicle must also be able to
  accommodate the device; sometimes there is not a workable location where it can be
  installed.
- Repower replacing the obsolete engine with a new engine that meets or exceeds current emission standards. This is a good choice if the engine cannot be retrofit and the vehicle has a significant life expectancy.
- Replace replacing the entire vehicle is considered if the vehicle is near the end of its
  useful life or obsolete in other ways.

Various studies have shown that diesel emission reduction strategies are highly cost-effective, in part due to the fact that the diesel engine fleet tends to be older than the gasoline engine fleet, but also due to the nature of the pollutants emitted by diesel engines.

In addition, diesel emission reduction projects reduce the exposure of vulnerable populations such as children, and reduce "hot spots" of emissions in areas near idling or concentrations of vehicles, such as schools, transit centers, freight yards, rail yards, and construction sites. This has been recognized by school districts, which have requested funds to retrofit school buses, and by municipalities eager to sponsor locomotive switch engine projects for yards located in their communities. IEPA also recognizes the value of these projects and has sponsored a project in which they will help smaller school districts retrofit their buses in addition to sponsoring locomotive repower projects.

# **CMAQ Funding**

Diesel emission reduction projects have been eligible for CMAQ funding since the inception of the program, although not all types of projects were eligible, and the emphasis in CMAQ programming nationwide was clearly on other types of projects. As the program progressed, and the automobile fleet in general became cleaner, the merits of diesel emission reduction projects became clearer, and CMAQ funding began to be used for these types of projects.

Northeastern Illinois has funded diesel emission reduction projects as far back as the mid-1990's when the CTA used CMAQ funds to test fuel cell buses. Projects have become more frequent in recent years, and have included:

- CTA Purchase of hybrid-electric buses (2001)
- CTA Engine upgrade and purchase of ultra low-sulfur diesel (2003)
- Pace Purchase of ultra low-sulfur diesel fuel (2005)
- Tollway –Truck stop electrification (2006)
- CDOE Chicago diesel fleet retrofit (2007)
- CTA Bus cold start devices (2007)
- Chicago Public Schools School bus retrofit (2008)
- Riverdale CSXT Barr Rail Yard switch engine retrofit (2008)

Other regions across the country used CMAQ funds for many of the same types of projects as in northeastern Illinois. In recognition of these projects' importance, SAFETEA-LU included language giving priority to diesel emission reduction efforts.

Railroads, too, have recognized that reducing emissions and fuel consumption from their locomotives benefits their own operations as well as being a good neighbor to the communities in which they operate. Thus, they have undertaken CMAQ-funded projects in New York and Michigan as well as participating in very large state-funded programs in Texas and California. The Union Pacific railroad has submitted a letter in support of continuing these projects.

In these cases, and in northeastern Illinois too, the focus has been on switch engines, which frequently have the oldest, most polluting engines in the fleet, and also stay in the region where the air quality problems are the greatest. For CMAQ funded projects in particular, the funds may only be used in nonattainment areas, so the funds have not been used for line-haul engines that spend most of their time outside the region to which the funds were apportioned.

#### **Recent CMAQ Diesel Emission Reduction Program**

Beginning in 2009, diesel emission reductions were classified separately from other CMAQ projects in the region. In that year, ten projects were funded for just over \$19,500,000 in federal funds. Of this, just under \$9,600,000 was for locomotive repower projects for private railroads. In addition, IEPA 's project to fund school bus retrofits is anticipated to fund retrofits to buses owned by private operators under contract to school districts.

The funding for private railroads was a significant increase in funding for public-private sector projects; the first private railroad to receive funding was the CSX in 2008, also for a locomotive repower project.

As the 2009 program was developed, the CMAQ Project Selection Committee recognized that, as private entities and as beneficiaries of improved fuel economy for the new engines they acquire, the railroads should be expected to contribute above the minimum twenty percent match required for CMAQ projects. As a first effort, a fifty percent match was requested from the railroads being sponsored. All the railroads declined to participate at this match level. Investigation revealed that California had encountered similar resistance to a fifty percent match requirement for their Carl Moyer state-funded diesel retrofit program. Given this, a thirty-five percent match was requested. This match level was accepted by all railroads but one that insisted on a twenty percent match. It was dropped from the recommended program. The Project Selection Committee agreed to revisit the match requirement as the program evolved, to see whether a larger match could be obtained as the railroads understood the full benefits they will realize and also become acclimated to the new equipment in their fleets.

To address the requirement that the locomotives being repowered would benefit the region the Project Selection Committee required that they stay in the region for ten years, a condition to which the railroads agreed. To enforce this provision, the contract between IDOT, the sponsoring municipality and the state specifies this requirement and provides that the CMAQ funds be paid back if the condition is not met. The applicable part of the contract (section 2) is attached.

An additional concern is that a project not simply fund expansion of the railroad's operation. To that end, the contract requires the destruction of the engine being replaced.

In 2010, the CMAQ Project Selection Committee programmed thirteen diesel emission reduction projects, totaling \$42.3 million. Of this, \$11.2 million was for projects actually in 2012 and 2013. Of the remaining \$31.1 million, just under \$20.9 million was programmed to private railroads, out of \$31 million in federal funds requested. The public agencies requesting diesel emission reduction funds were programmed for all funds they requested.

## **Further Information**

Much has been written about diesel emission reduction efforts, the CMAQ program, and northeastern Illinois' program of projects. Some links with further information include:

## FHWA CMAQ Guidance:

http://www.fhwa.dot.gov/environment/cmaqpgs/cmaq08gd.pdf

# Diesel project benefits:

http://www.marama.org/diesel/urbanfleets/documents/Urban\_Fleets\_%20050512\_%20WescottDieselStudy.pdf

http://www.epa.gov/otaq/regs/nonroad/locomotv/420f09025.pdf

Comments on FY 2010-2011 CMAQ Program:

http://www.cmap.illinois.gov/FFY1011PublicComment.aspx



## November 11, 2009

Ms. Patricia Berry Chicago Metropolitan Agency for Planning 233 S. Wacker, Suite 800 Chicago, IL 60606

Dear Ms. Berry:

As demonstrated by the CREATE Project, the railroad industry's goal when seeking public funds for railroad projects is that the public expense will be equal to the public benefits and the railroads' financial contribution will equal our benefit.

The Union Pacific believes that the CMAQ funded GenSet Diesel Retrofit Projects meet that goal. The switch engines currently used in the Proviso Yard have a long, useful life because they are easily repaired and rebuilt. These engines can continue to be used legally for at least ten more years. Their emissions would continue at their current levels for those ten years.

Our CMAQ proposal to retrofit switch engines at Proviso to GenSet technology will, in our opinion, reduce the NOx emission by 85%, diesel particulate matter by 75%, fuel consumption by 25% with a corresponding 25% reduction in greenhouse gas emissions for each engine.

In order to achieve the emission reductions resulting from GenSet technology as soon as possible, federal, state and local agencies have provided funding incentives for several years to retrofit switch engines with GenSet technology. The funds used to provide these funding incentives come from taxes, fees, etc., that the Union Pacific, other businesses and individuals pay. In addition, the Union Pacific contributes 35% of the cost of the CMAQ grants.

We are convinced that the GenSet retrofits are a very cost effective way to improve air quality that Union Pacific is paying its fair share to achieve.

Sincerely,

Munus a. Jay

cc:

Don Kopec Tom Murtha Ross Patronsky Lanny Schmid Mike Payette

(TAZ\111109-001)

WHEREAS, in the interests in the health and safety of its employees, customers and the communities it serves, the COMPANY proposes to contribute to the clean and efficient operation of its transportation operations including removing from its roster, and providing as retrofit/trade-in allowance, the three (3) locomotives listed in Exhibit B; and

WHEREAS, pursuant to federal law, monies have been provided for Congestion Mitigation and Air Quality (CMAQ) improvements; and

WHEREAS, the PROJECT, or portions of the PROJECT, at the request of the COMPANY, are being programmed with the United States Department of Transportation, Federal Highway Administration (FHWA), for implementation with the use of federal funds under the Federal CMAQ Program; and

WHEREAS, the DEPARTMENT will provide CMAQ funding for the PROJECT, as set forth in Exhibit A: and

WHEREAS, the parties mutually agree to accomplish the proposed improvements through the use of Federal and/or State funds which are provided under applicable Federal or State act, law or appropriation.

NOW, THEREFORE, in consideration of the premises and of the mutual covenants and agreements as hereinafter contained the parties hereto agree as follows:

SECTION 1. The COMPANY will perform or cause to be performed the PROJECT work.

It is understood that the COMPANY will contract for portions or all of the PROJECT work.

SECTION 2. The GenSet locomotives will operate out of the COMPANY's Clearing Rail Yard in Bedford Park, Illinois, for a period of at least ten years. The ten year performance period shall begin on the date the GenSet locomotives pass the STATE's final inspection, as required in Section 7 herein. The GenSet locomotives will not be removed from the Northeast Illinois CMAQ Non-attainment area, hereinafter referred to as the "AREA," during that time except for maintenance and servicing deemed necessary by the COMPANY to ensure the good working order of this equipment. The GenSet locomotives will only be absent from the AREA

during the time needed to transport them to the appropriate maintenance and service facility, the time during which maintenance and service is being performed, and the time needed to transport them back to the rail yard. The COMPANY may transport GenSet locomotives to or from its maintenance and service facility either as a working unit or non-working unit in an engine consist. All maintenance and servicing on the GenSet locomotives will be paid for by the COMPANY. During the 10 year term covered under this agreement, the COMPANY shall not exchange, retire, trade in, or dispose of any of the three (3) GenSet Locomotives covered by this agreement without prior written approval from the STATE. In the event that any of the GenSet locomotives funded under this agreement are taken out of service prior to the end of the 10 year performance period, the COMPANY shall provide a refund to the STATE in the amount of \$8,125.00 (one-one hundred twentieth of the STATE's contribution of \$975,000.00 per locomotive) times the number of months remaining in the required 10 year performance period for that locomotive, unless otherwise agreed to in writing by the STATE and the COMPANY. During their 10 year performance period, if any of the GenSet locomotives are taken out of service for any reason other than routine maintenance and service, COMPANY shall immediately inform the STATE in writing.

SECTION 3. The term "PROJECT COST," as herein used, is defined as the actual costs incurred by the COMPANY or the COMPANY's contractor for the performance of the PROJECT work. Reimbursable costs must be directly related to the actual purchase price of the GenSet locomotives, as set forth in Exhibits A and B.

SECTION 4. The PROJECT COST will be met in part by contributions from the federal government. Federal Congestion Mitigation and Air Quality Funds will be applied to the eligible items of the PROJECT COST at the established federal participation ratio of sixty-five percent (65%) up to an amount not to exceed Two Million Nine Hundred Twenty-five Thousand Dollars (\$2,925,000.00). The balance of the PROJECT COST, after the deduction of federal funds, will be charged to and paid by the COMPANY in the manner and at the times hereinafter set forth.